BEFORE THE

FEDERAL COMMUNICATIONS COMMISSION

WASHINGTON, D.C. 20554

In the Matter of	)	
	)	ET Docket No. 99-254
Closed Captioning Requirements for Digital Television Receivers	)	

REPLY COMMENTS OF GENERAL INSTRUMENT CORPORATION

General Instrument Corporation ("GI"), by its attorneys, hereby files its reply comments on the Notice of Proposed Rulemaking ("Notice") in the above-captioned proceeding.[1]

GI continues to be concerned about the impact of the proposed rules on the substantial deployed base of digital cable encoding and decoding equipment. As noted in GI's initial comments, the cable industry has already deployed 4.5 million digital converters, as well as hundreds of digital encoding devices, that can only process EIA-608 captions in the DVS-157 format, as opposed to the A/53 format specified in the EIA-708-B standard.[2]

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[1] In the Matter of Closed Captioning Requirements for Digital Television Receivers, ET Docket No. 99-254, FCC 99-180 (rel. July 15, 1999) ("Notice").

[2] The DVS-157 technology was developed and implemented before the A/53 format was created and was established as a de facto cable industry standard before the relevant portion of A/53 was incorporated into any DTV product. GI developed the DVS-157 format for carrying NTSC captions in digital video signals in 1992-1993.

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As GI suggested, the Commission can ensure compatibility with this existing cable equipment by requiring that broadcasters carry EIA-608 captions in both the A/53 format and the well-established DVS-157 format.[3]

In addition, GI continues to believe that rather than mandate adoption of Section 9 of EIA-708-B (or full EIA-708-B as suggested by certain commenters[4]), the Commission can achieve advanced captioning functionality in a more user-friendly and cost-effective

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The DVS-157 technology was built into digital cable equipment beginning in 1993-1994 and deployed soon thereafter by cable operators. The A/53 format did not exist at that time. GI submitted the DVS-157 technology to the Grand Alliance in 1994 for adoption as a digital broadcast standard. The Grand Alliance modified this proposal so that it could carry DTV captions instead of EIA-608 captions, and this resulted in the A/53 format (which was standardized by ATSC in September 1995). However, the A/53 format that was standardized was not backward compatible with the submitted DVS-157 format. In February 1999, SCTE formally adopted the de facto DVS-157 standard as an ANSI-approved standard. EIA-708-B was balloted just last month (October 1999), and this standardized the coding and carriage of DTV captions, as well as "a method" of carrying EIA-608 captions. Unfortunately, this method (based on the A/53 format) was not compatible with the SCTE-DVS-157 format, and the EIA-708-B standard did not include any statements on other methods that were being used by the cable and satellite industries for carriage of EIA-608 captions in digital video programming.

[3] See GI Comments at 5-8. See also NCTA Comments at 5-7 (urging the Commission to adopt rules that do not render obsolete the deployed base of digital cable equipment that uses the DVS-157 standard).

[4] See Comments of Alexander Graham Bell Association at 1-2; Comments of National Association of the Deaf at 6-7; Comments of Self Help for Hard of Hearing People at 2-3; Comments of Telecommunications for the Deaf, Inc. at 2; Comments of Vitac Corporation at 3-4.

manner by: (1) relying on the well-established EIA-608 standard; (2) specifying in its rules what advanced captioning display options consumers should have; and (3) affording manufacturers the flexibility to determine how to implement those options using the graphics processing functionality of DTV sets.[5]

With regards to advanced captioning functionality, it is important to stress that: (1) digital TVs will already include graphics processing capabilities that could be used to manipulate the look and feel of EIA-608 captions locally to produce the same enhancements that would be possible using EIA-708-B; and (2) if the Commission wants to afford consumers greater control over the look and feel of captions (as the Notice suggests), then DTVs will, by definition, have to incorporate functionality allowing viewers to override whatever caption enhancements are inserted by the captioner and the encoder at the source with the viewer's specified display preferences.[6] For example, if captions to a particular

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[5] See GI Comments at 8-13.

[6] In fact, both the EIA-608 and EIA-708 standards contain such a consumer override provision. Section 3.2 of the EIA-608 standard states: "If [a closed caption] decoder also permits the viewer to select background/foreground colors or other attributes, it is suggested that the viewer's selection take priority, and that the Background and Foreground Attribute Codes described herein be ignored whenever the viewer has selected something other than the default. A more complicated rule could be implemented, but the most straightforward rule would be that the viewer's selection takes priority over the caption provider's selection." Similarly, section 8.3 of EIA-708 states: "Receiver manufacturers have the option to provide controls which may allow users to override styles and attributes specified in the service channel caption streams.

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program service were sent in a standard Times Roman-styled font, but the consumer preferred display of the captions in a larger Courier-styled font, in order for the consumer to override the Times Roman font and replace it with Courier would require that the DTV set have a capability to manipulate the look and feel of the captions. Seen in this light, the need for the caption enhancements to be inserted at the source (as contemplated by the EIA-708-B standard, for example) is clearly superfluous. Moreover, as GI explained in its initial comments, reliance on EIA-608 captions and the built-in graphics capabilities of digital TV sets to generate advanced captioning capabilities will save the video industry many millions of dollars in upgrade and equipment replacement costs that would otherwise be required to generate enhanced captions at the source.[7]

Finally, GI opposes the proposal of the National Association of Broadcasters ("NAB") that, in the absence of EIA-608 data, digital set-top converters construct the relevant caption

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Optional user controls might consist of caption font size, caption color and caption intensity (e.g., brightness) overrides."

[7] See GI Comments at 8-13. Adoption of GI's proposal to rely on EIA-608 and the local capability of DTVs to manipulate the look and feel of captions is particularly justified given the numerous problems with the EIA-708 standard described by various commenters. See, e.g., Comments of HBO at 6-7 (noting lack of production equipment to create EIA-708 captioning); Comments of Media Captioning Services at 2 (noting lack of EIA-708 captioning software); CEMA Comments at 13-14 (noting lack of consensus on test stream for EIA-708 standard as well as ongoing testing of chip software and interface design for standard).

information from the PSIP data stream and encode it into the VBI of the video on the converter's NTSC output.[8] Even putting aside the serious jurisdictional issue raised by this proposal,[9] such a conversion process is impractical based on both cost and technical considerations. At the very least, since EIA-708 captions do not have a direct counterpart in EIA-608 captions, a new mapping would have to be created for this purpose. In addition, cable programming may not even include all the PSIP information required to implement such a conversion. In essence, NAB is suggesting that if a broadcaster elects for whatever reason not to include EIA-608 caption information into a digital broadcast video stream, the Commission should require converter manufacturers -- and, ultimately, consumers who lease or buy converters -- to bear the cost of ensuring that captions are created for, and displayed on,

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[8] See NAB Comments at 6, n. 14. NAB's proposals regarding the use of PSIP in connection with program ratings and the V-Chip are clearly beyond the scope of this proceeding. In any event, NAB's suggestion that reliance on PSIP is necessary to "ensure that parental program blocking works as intended," NAB Comments at 8, is inaccurate. Digital program services are already capable of carrying V-Chip rating information pursuant to the EIA-608 standard that digital cable converters are equipped to pass along to television receivers. Moreover, electronic program guides display program ratings and allow parents to block objectionable content. So the delivery, processing, and display of program rating information is working just fine without the use of PSIP.

[9] Several commenters questioned the Commission's authority to impose closed captioning decoding requirements on converter boxes under the Television Decoder Circuitry Act of 1990 ("TDCA"). See CEMA Comments at 9-13; Thomson Comments at 10; GI Comments at 12, n. 14. Moreover, NAB's proposal goes far beyond even the FCC's proposal in the Notice that set-top converters only handle "analog

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the millions of analog TV sets that will exist in consumers' homes for many years to come. The more practical approach -- and by far the one that is more cost-effective for the video industry and consumers alike (as it would avoid shifting the cost of conversion to consumers, and avoid the significant expense to the video industry to purchase new and unnecessary EIA-708 captioning equipment) -- would be for the broadcaster to insert the EIA-608 caption information at the source so that digital converters could then transcode the EIA-608 caption information onto line 21 of the VBI for decoding and display by the analog TV.[10] And, as previously stated, new DTV receivers would then be able to produce the advanced closed captioning functionality desired by the hearing-impaired community through the local enhancement of the EIA-608 captions.

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caption information that is transmitted with the DTV signal." See Notice at ¶ 12 (emphasis added).

[10] NAB also proposes that all digital converter boxes must be required to pass through EIA-608 data contained in digital programs to TVs and VCRs connected to the analog output of the converter. NAB Comments, at 4-6. In this regard, GI notes that all of its digital converter boxes already function in accordance with NAB's proposal. Specifically, GI digital converters do not decode EIA-608 data contained in digital programs and then pass "open" captions to the analog receiver. Rather, they transcode the EIA-608 data (as carried in the DVS-157 format) onto line 21 of the VBI. In this way, the closed captioning data comes out of GI's converters embedded in the converted analog video signal so that the TV itself can then perform the closed captioning decoding function, thereby avoiding the problems described by NAB.

CONCLUSION

Based on the foregoing, GI respectfully urges the Commission to adopt closed captioning requirements consistent with the reply comments set forth herein and with GI's initial comments in this proceeding.

Respectfully submitted,

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